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TWO MYOBIID MITES (MYOBIIDAE: TROMBIDIFORMES) FROM THE GREAT HIMALAYA MOUNTAINS*)

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Abstract. In the region of the Barun Glacier, in the vicinity of the Makalu Mountain in the Great Himalaya (Nepal) two mite species of the family Myobiidae, *Protomyobia kounickyi* sp. n. and *Radfordia lemmina* (C. L. Koch, 1841) were found on *Soriculus caudatus soluensis* (Gruber) and *Alticola roylei* (Gray) respectively at high altitudes (3450—4900 m). A single specimen of the latter species slightly differs from specimens from the typical host, *Clethrionomys glareolus* (Schreber), in a greater length of l_4 and d_5 and in the form of coxal setae 1, but it is not regarded as a different taxon.

Within the framework of the zoological and parasitological research carried out during the Czechoslovak expedition "Himalaya 1973" into the region of the Makalu Mountain (East Nepal) small mammals were captured and parasitologically examined. By the method of washing the caught animals in a detergent solution some specimens of myobiid mites were obtained which served as basic material for the present paper.

The small mammals were captured at the altitude of 3450—6000 m in the valley of the river Barun Khola which is the rightside tributary of the river Arun (geographic coordinates of the river mouth in longitude 87°22′ East and latitude 27°24′ North) and represents an axis of the valley extending as far as the Nepal-Tibetan border between the massifs of Mount Everest and Makalu.

Protomyobia kounickyi sp. n.

Type series: Holotype female, allotype male and 1 paratype deutonymph, ex *Soriculus caudatus soluensis* (Gruber), Barun Valley — Phematan, Great Himalaya Mts., Nepal, 3450 m elev., March 26, 1973, lgt. M. Daniel. Material is deposited in the collection of the Institute of Parasitology, Czechoslovak Academy of Sciences in Prague.

Female (Holotype) (Fig. 1A, B): Body very broad to thickset. Specimen slightly deformed by glass-pressure.

Dorsum: Dorsal setae unexpanded and unstriated, but with a lateral inflation, with the exception of *vi*, l_4 and d_5, which are setiform and short. Very long setae l_5 form caudal filaments. Setae d_1 situated slightly anteriorly to l_1. All inflated setae in *d* and *l* series extend beyond the basis of following setae, setae d_3 being the longest from them (with exception of l_1 and l_5). Propodosomal pore lies antero-laterally to *v i*. Vulva normally developed, with two short vulvar valves.

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Venter: Only one pair of short setiform paragenital setae is developed anteriorly to the genital conus. The other setae on venter belong to the coxal regions.
Genito-anal complex: Three pairs of short setiform anal setae (*a i*, *a e* and a_3) and two pairs of short setiform genital setae (g_4 and g_5) are developed in the vulvar region. No other genital setae are present. A part of copulatory canal is visible on venter of hysterosoma.
Gnathosoma: Pentagonal, gnathosomal setae very long (77 μ) and slightly spine-like, hypostomal setae shorter (32 μ) but also spine-like. A pair of rostral dorsal and two pairs of palpal setae are setiform. A pair of rounded pores with spine-like structure developed on dorsal side of gnathosoma, anteriorly to the stigma. Stigma elongated, of peculiar leaf-like structure.
Legs: Legs I with two small terminal claws, legs II with one strong and one fine curved claw, legs III and IV each with one long straight claw. Leg chaetotaxy as follows:

cx 3 — 4 — 1 — 1	ge 8 — 7 — 6 — 6
tr 3 — 2 — 3 — 3	ti 6 — 6 — 6 — 6
fe 5 — 5 — 3 — 3	ta 6 — 6 — 6 — 6

Leg solenidiotaxy as follows: ge 1 — 1 — 0 — 0; ta 3 — 2 — 0 — 0
Femur I with shell-like formation ventrally (probably modified seta), genu I with a clasping tubercle. Ventral median seta on genu and tibia I and dorsal seta of femur and genu I shell-like expanded and striated. Several ventral setae on femur and tibia II—IV spine-like. One of ventral setae on tarsus III and IV short, blunt, thorn-like.
Measurements (in microns): Body L. 420, W. 286; *v e* 88, *v i* 13; *sc e* 108; *sc i* 41; d_1 51; d_2 52; d_3 72; d_4 53; d_5 12; l_1 131; l_2 55; l_3 52; l_4 14; l_5 291.
Male (Allotype) (Fig. 2A, B): Body relatively short and broad, slightly deformed during preparation by glass-pressure.
Dorsum: All dorsal setae with lateral bulbous inflation, with the exception of fine setiform setae *v i*, *sc i*, d_1 and d_2. Setae l_4 and d_5 are absent. Setae d_1 situated anteriorly to the genital pore, d_2 laterally to them. Propodosomal pores antero-laterally to *v i*. Genital pore lies at the level of middle of trochanter III, only with two pairs of setiform genital setae. Penis with comb-like thickened basal part, displaced during preparation.
Venter: Only coxal setae developed on the ventral part of body.
Gnathosoma: As in female. Gnathosomal setae 76 μ long.
Legs: Leg chaetotaxy similar to that of female, but only two pairs of coxal setae I are developed; *cx I 3* are absent. Setae *cx IV 1* are very short. Postero-dorsal seta (*pd*) on tarsus I and II thickened and blunt. Ventral median seta on genu I setiform. Tarsal claws as in female.
Measurements (in microns): Body L. 355, W. 258; *v e* 85; *v i* 3; *sc e* 94; *sc i* 8, d_1 3; d_2 19; d_3 41; d_4 65; l_1 122; l_2 61; l_3 64; l_5 296; Penis L. 140.
Derivatio nominis: The species is dedicated to the Czechoslovak mountaineer Dr. J. Kounický, member of the Third Czechoslovak mountaineering expedition "Himalaya 73" who tragically died while the attempt of climbing the Makalu mountain (8481 m) was made in the Great Himalaya.
The new species is closely related to the species *Protomyobia nodosa* Jameson, 1970 described from Taiwan and collected from *Episoriculus fumidus* (Thomas), which is considered by some authors to be a subspecies or a synonym of *Soriculus caudatus* (Hodgson) (Ellerman and Morrison-Scott 1951, Gureev 1971). The female may be easily distinguished on the basis of the presence of lateral bulbous inflation on setae *v e*, *sc e*, l_1 and l_3 (which are lacking this inflation in *P. nodosa*), on the basis of markedly shorter l_4 setae and the presence of a single pair of paragenital setae in contract to 8

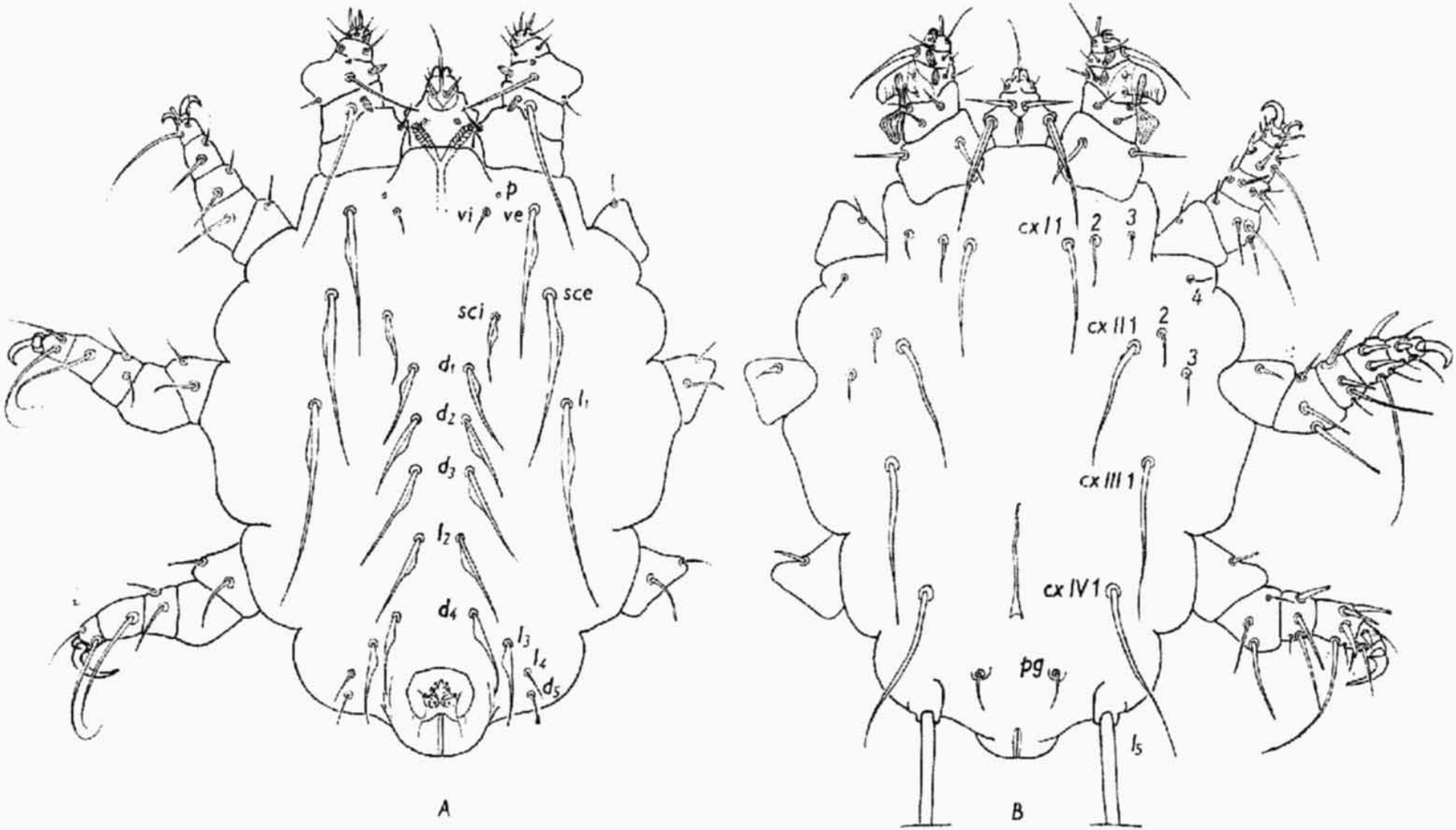

Fig. 1. *Protomyobia kounickyi* sp. n., female: A — dorsal view, B — ventral view.

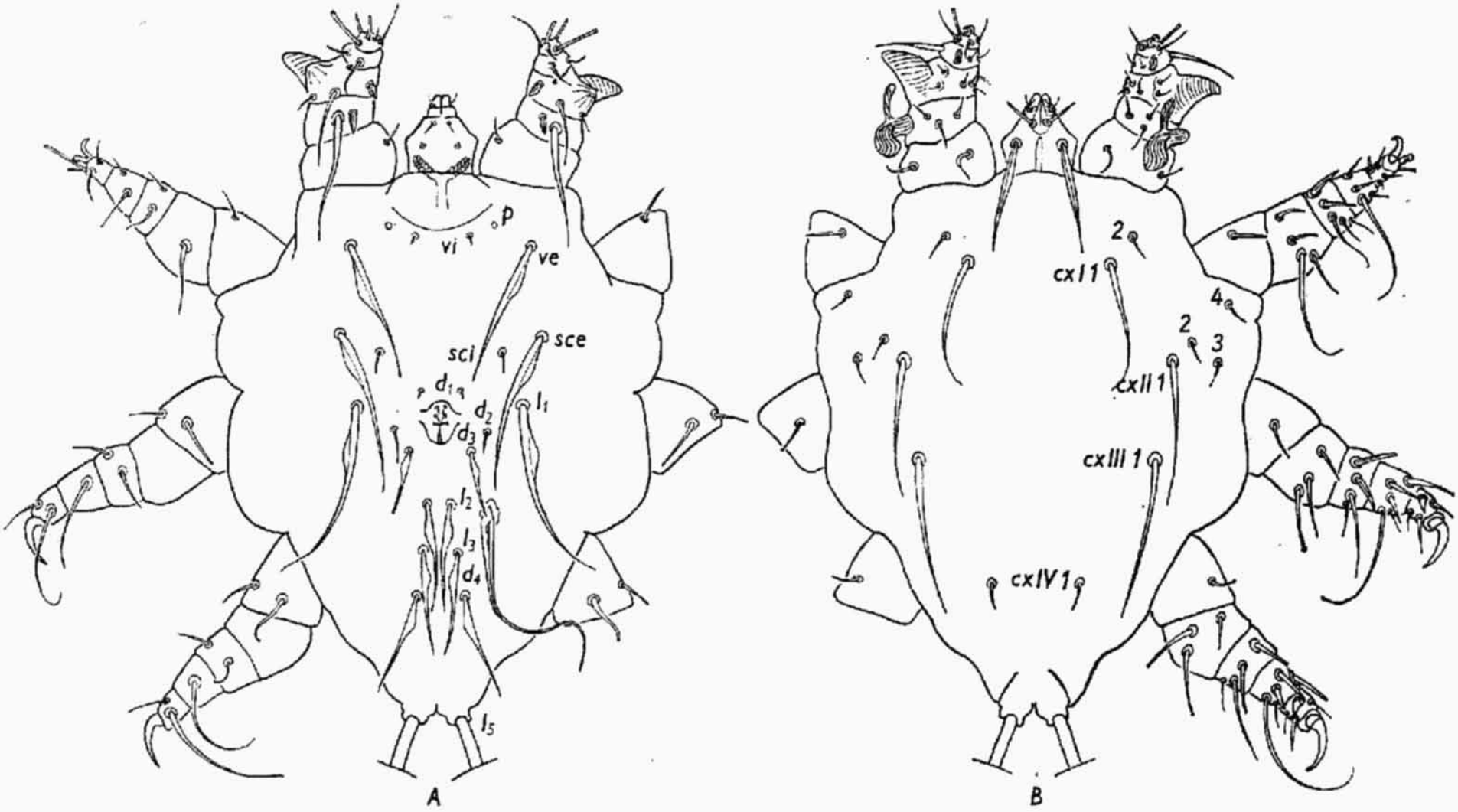

Fig. 2. *Protomyobia kounickyi* sp. n., male: A — dorsal view, B — ventral view.

pairs of setae in perigenital region in *P. nodosa*. The male of *P. nodosa* is also lacking the lateral bulbous inflation on setae *v e*, *sc e*, l_1 and d_4, setae d_4 are fine and short and the third pair of *cx I*, which is missing in *P. kounickyi* sp. n., is developed.

Radfordia lemnina (C. L. Koch, 1841)

Material examined: 1 ♀ ex *Alticola roylei* (Gray), base camp near the front of Upper Barun Glacier, Great Himalaya, Nepal, 4900 m elev., April 21, 1974, lgt. M. Daniel.

This species is known from the entire palearctic and nearctic region, parasitizing a number of host species of the family Cricetidae, primarily of the subfamily Microtinae. It has been less frequently found on members of the genus *Apodemus* (Muridae). It was originally described from *Clethrionomys glareolus* (Schreber), later it was also found on other species of the genera *Clethrionomys*, *Microtus*, *Pitymys*, *Eothenomys* and *Peromyscus*. In view of hosts the species shows a relatively great variability, mainly in the length of dorsal setae (Tab. 1). The mites collected on host species of the genus *Microtus*

Table 1. Comparison of length of some body setae in 15 female specimens of *Radfordia lemnina* (C. L. Koch, 1841) originated from different hosts (in microns).

Host / Seta	*Alticola roylei*	*Apodemus sylvaticus*	*Clethrionomys glareolus*	*Clethrionomys rutilus*	*Pitymys subterraneus*	*Microtus arvalis*	*Microtus agrestis*
v i	43	45–46	43–59	57	57–68	60–62	67
v e	–	85	84–94	95	88–93	90–96	99–100
sc e	–	68	66–82	74	72–79	80–87	78–83
l_1	68	62	58–67	76	66–72	80–83	78
l_4	21	15–16	14–18	15	12–13	14–15	13–15
d_5	18	12–13	12–16	14	12	12–14	11–14
cx I 2 width	7	5	4	5	4	4–5	4

Specimens measured: 1 ♀ from *Alticola roylei* (reported in this paper); 2 ♀♀ from *A. sylvaticus*, Pavlovské vrchy, ČSSR; 5 ♀♀ from *C. glareolus*, Veltrusy and Řečany n. Lab., ČSSR; 1 ♀ from *C. rutilus*, Borkliden, Sweden; 2 ♀♀ from *P. subterraneus*, Doupov, ČSSR; 2 ♀♀ from *M. arvalis*, Řečany n. Lab., ČSSR and Nijmegen, Netherland; 2 ♀♀ from *M. agrestis*, Krkonoše Mts., ČSSR and Hatert, Netherland.

differ more markedly from the specimens from the typical host, primarily in greater length of *v i*, but also of *v e*, *sc e* and l_1. The specimens from *Pitymys subterraneus* (de Sélys Longchamps) however, stand between these two forms as regards their dimensions, and the mites from *Apodemus* practically show no difference from specimens collected on *Clethrionomys*. Our single specimen from *Alticola roylei* (Gray) differs from the specimens from *Clethrionomys* only in somewhat greater length of l_4 and d_5 and greater width of spine-like *cx I 2* setae and in thinner *cx I 1* setae. We presume that these differences are too small and indistinct and may express a mere individual variability, so that they do not authorize us to distinguish specimens from *Alticola* as a different taxon. Likewise, the great variability in dimensions in specimens from the same host does not permit a taxonomic differentiation of forms from different host genera or species on the basis of the material studied, although in the case of specimens from the genus *Microtus* such a differentiation might be well-founded.

ДВА ВИДА КЛЕЩЕЙ (MYOBIIDAE: TROMBIDIFORMES) ИЗ БОЛЬШИХ ГИМАЛАЕВ

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Резюме. В области ледника Барун, недалеко от горы Макалу в Непальских Гималаях на более высоких высотах над уровнем моря (3450—4900 м) обнаружены 2 вида клещей семейства Myobiidae: *Protomyobia kounickyi* sp. n. на *Soriculus caudatus soluensis* Gruber и *Radfordia lemnina* (C. L. Koch, 1841) на *Alticola roylei* (Gray). Единственный обнаруженный экземпляр второго вида немного отличается от экземпляров с типичного хозяина, которым является *Clethrionomys glareolus* (Schreber), по большей длине l_4 и d_5 и по форме коксальных щетин I, но не считается особым таксоном.

REFERENCES

ELLERMAN J. R., MORRISON-SCOTT T. C. S., Checklist of Palaearctic and Indian Mammals 1758 to 1946. British Mus. (Nat. Hist.), London, pp. 810, 1951.

GUREEV A. A., (Shrews (Soricidae) of the world) Izd. Nauka, Leningrad, pp. 254, 1971 (In Russian).

JAMESON E. W., Jr., Notes on some myobiid mites (Acarina: Myobiidae) from Old World insectivores (Mammalia: Soricidae and Talpidae). J. Med. Ent. 7: 79—84, 1970.

— DUSBÁBEK F., Comments on the myobiid mite genus *Protomyobia*. J. Med. Ent. 8: 33—36, 1971.

RADFORD C. D., A revision of the fur mites Myobiidae (Acarina). Bull. Mus. Natl. Hist. Nat., Paris, sér. 2, 21: 91—97, 1949.

— , A revision of the fur mites Myobiidae (Acarina). Bull. Mus. Natl. Hist. Nat., Paris, sér. 2, 21: 425—429, 1949.

REPPENING C. A., Subfamilies and genera of the Soricidae. Geol. Survey Prof. Paper 565: 1—74, 1967.

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